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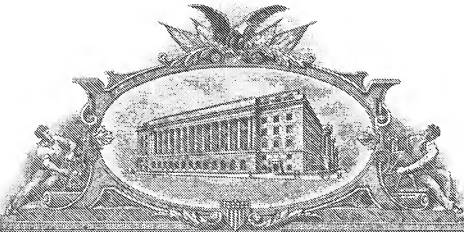
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# PROVISIONAL APPLICATION FOR PATENT COVER SHEET

TO: Mail Stop Provisional Patent Application  
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This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Atty. Docket No.		CTS5 0158 PRV	
INVENTOR(S)			
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Additional inventors are being named on the _____ separately numbered sheets attached hereto.			
TITLE OF THE INVENTION (500 characters max.)			
HEADER LATCH FOR CONVERTIBLE TOP			
DIRECT ALL CORRESPONDENCE TO:			
CUSTOMER NO. <b>22045</b>			
ENCLOSED APPLICATION PARTS (check all that apply)			
<input checked="" type="checkbox"/> Specification - Number of Pages <u>6</u>	<input type="checkbox"/> CD(s), Number _____		
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<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		PROVISIONAL FILING FEE AMOUNT(S)	AMOUNT SUBMITTED OR TO BE CHARGED TO DEPOSIT ACCT.
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- ☒ A return postcard is enclosed.

Respectfully submitted,

SIGNATURE Angelika Phillips

REGISTRATION NO. 29,805

DATE February 27, 2004  
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## CERTIFICATION UNDER 37 C.F.R. § 1.10

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## HEADER LATCH FOR CONVERTIBLE TOP

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

5 The present invention relates to a header latch handle and dual latch for securing a one bow of a convertible top to a windshield header.

#### 2. Background Art

10 Convertible tops are provided for vehicles to allow the passenger compartment to be converted to an open top configuration. Convertible tops may be extended to cover the passenger compartment or retracted to provide an open passenger compartment. Convertible tops have a soft top cover that is supported by a top stack linkage in its extended position. The convertible top may be folded by the top stack linkage and stowed in a storage compartment or in a portion of the trunk of the vehicle when it is retracted.

15 Convertible tops normally have what is known as a one bow that is secured by a latch or clamping mechanism to the windshield header. Prior art latches generally have active hooks for securing the one bow to the windshield header. Active hooks may be used to draw the convertible top into the proper position to be secured to the windshield header, provided that, the degree of misalignment between the convertible top and the header is not excessive. If the 20 active hook does not engage the receptacle on the header, the convertible top may appear to be latched when, in actuality, the latching operation has been unsuccessful. This can create problems especially if the one bow is not fully secured to the windshield header as the vehicle is driven which can result in damage to the convertible top.

25 Prior art header latches may be provided on both the right and left front corners of the convertible top and receptacles are provided on both sides of the

windshield header. Two separate handles are generally provided with one on each side of the vehicle that must be separately manipulated to properly secure the convertible top to the windshield header. A driver must operate two handles and reach across the vehicle to operate a passenger side handle which with some vehicle designs may be inconvenient.

Other prior art latch mechanisms may have a centrally located latch mechanism that secures the center portion of the one bow to a central portion of the windshield header. Active hooks may again be used to engage the windshield header latch receptacle. With a centrally located latch, pins or guides must be provided on the left and right sides of the convertible top that engage cooperating receptacles to hold the front corners of the convertible top against the windshield header.

With either approach, an alignment problem of the convertible top to the header may be encountered and ineffective latching may not be readily apparent.

There is a need for a simple and effective header latch mechanism that provides positive feedback confirming successful latch operation. There is also a need for a durable latch mechanism that is convenient to operate from either the passenger seat or driver seat, preferably from a central location that positively secures right and left corners of the convertible top to the right and left corners of the windshield header.

The above problems and needs are addressed by applicant's invention as summarized below.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a fragmentary perspective view of a vehicle having a convertible top;

FIGURE 2 is a fragmentary perspective view of the left side of a convertible top stack structure and windshield header;

FIGURE 3 is a fragmentary rear elevation view of a handle and one bow of the header latch mechanism of the present invention;

5                   FIGURE 4 is a center longitudinal cross-sectional view of the handle assembly of the header latch of the present invention;

FIGURE 5 is a fragmentary perspective view of the left side of the handle assembly and latch receiver of the header latch of the present invention; and

10                   FIGURE 6 is a cross-sectional view taken along lines 6-6 in Figure 5.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Referring to Figure 1, a vehicle 10 is shown diagrammatically with a convertible top 12. The convertible top 12 is shown in its extended, or passenger compartment covering, position wherein the convertible top 12 is secured to the windshield header 14 of the vehicle 10.

Referring to Figure 2, the convertible top 12 is shown in its extended position with a one bow 16 secured to the windshield header 14. A handle assembly 18 is mounted on the one bow 16. Right and left retainer latches 20 and 22 connect the one bow 16 to the windshield header 14, as will be more fully described below.

20                   A right side connecting rod 24 connects the handle assembly 18 to the right retainer latch 20. A left side connecting rod 26 connects the handle assembly 18 to the left retainer latch 22. In Figure 2, the left portion of the top stack linkage is illustrated and is generally indicated by reference numeral 28. The top stack linkage 28 includes a two bow 30, three bow 32, four bow 34 and five bow 36.

While a five bow convertible top is illustrated, the five bow 36 may be eliminated and a four bow system may be provided with the header latch of the present invention. In the four bow system, the rear edge of the convertible top may be secured by a tack strip or other permanent fasteners to the vehicle body.

5                   A tensioning link 38 is also illustrated that is used to tension the top and manipulate the five bow 36, as required, depending upon the extension and retraction cycles of the convertible top 12.

Referring to Figure 3, a handle 40 of the handle assembly 18 is shown in conjunction with the one bow body molding 42. Handle 40 and one bow  
10 body molding 42 are preferably formed by a Thixomolding® process wherein magnesium is injection molded to net size and shape. The body molding 42 defines a handle cavity 44 that is formed in a single step in the Thixomolding® process. A hand grip filler portion 46 is received within the handle 40 when the handle is properly seated in the body molding 42. A finger recess 48 is provided on the  
15 handle 40 to indicate the location on the handle 40 where finger pressure is applied to cause the handle 40 to rotate downwardly into its grasping position as shown in phantom lines in Figure 4. The handle is rotated more than 90° as indicated by the arrow shown in phantom lines in Figure 4.

The handle 40 is connected to a rotatable pin 50 that is rotated by the  
20 handle 40 to operate the header latch. A receptacle 54 is provided in the end of the pin 50 for a fastener 56 that holds the handle assembly 18 together. Pivot pin 58 interconnects the pin 50 with the handle 40 so that the handle 40 may be pivoted downwardly between a stowed position and a use position in which it can be used to turn the rotatable pin 50. At least one flange 60 of the handle 40 engages the pin  
25 50 when the handle is rotated to operate the latch. A bell crank 62 is secured to the rotatable pin 50 by means of the fastener 56 and is connected to the retainer latches 20 and 22, as will be more fully described below with reference to Figures 5 and 6. A bracket 64 is secured to the one bow body molding 42. A hole 66 is provided in the bracket 64 to receive the rotatable pin 50. Fasteners 72 may be used to secure  
30 the bracket 64 to the one bow body molding 42.

The handle 40, one bow body molding 42, and bracket 54 may be manufactured using a Thixomolding® process in which magnesium is injection molded to net size and shape. The Thixomolding® process reduces or eliminates machining operations and allows complex parts to be formed in a single step. The molded parts are strong and durable and allow parts to be made in one piece. Prior art designs for corresponding parts formerly required multiple pieces to be assembled in subassembly operations.

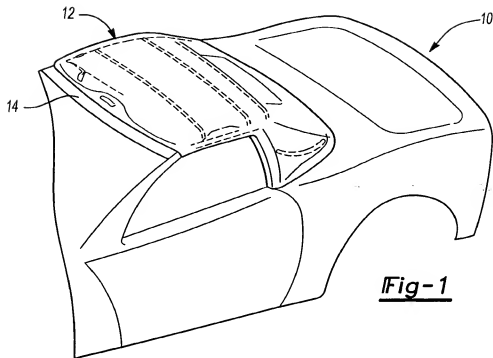
Referring to Figure 5, the handle assembly 18 is shown connected to the left retainer latch 22 by left connecting rod 26. The rotatable pin 50 and bell crank 62 are operated by the handle assembly 18. The pin 50 rotates the bell crank 62 and moves the right and left connecting rods 24, 26 in a reciprocating motion transversely relative to the vehicle. An inner end 80 of the left connecting rod 26 is connected by a pin 82 to the bell crank 62. An outboard end 84 of the left connecting rod 26 is secured by a pin 86 to a latch pin 88. Latch pin 88 is received within latch pin guide portion 90 of the left retainer latch 22. A receiver 92 selectively receives the latch pin 88 which extends through a passage 94 in the latch pin guide portion 90. A distal end 96 of the latch pin 88 is received in a keeper 98 defined by the receiver 92.

Referring now to Figures 5 and 6, latch pin 88 has a ramp surface 100 on its distal end 96 that engages a tapered surface 102 formed on the keeper 98. As the header latch is operated to latch the one bow 16 to the windshield header 14, the latch pin 88 is driven towards the keeper 98. The ramp surface 100 may engage the tapered surface 102 to aid in aligning the latch pin 88 with the keeper 98. When the latch pin 88 is fully received in the keeper 98, a sensor 106 receives a signal from an actuator (not shown) within the receiver 92 through wire 108. The sensor 106 may be a limit switch, Hall effect transducer, or a proximity sensor having an actuator that is triggered by proper insertion of the latch pin 88 in the keeper 98. Channels 110 are formed in the receiver 92 to facilitate mounting the receiver 92 on the windshield header 14.

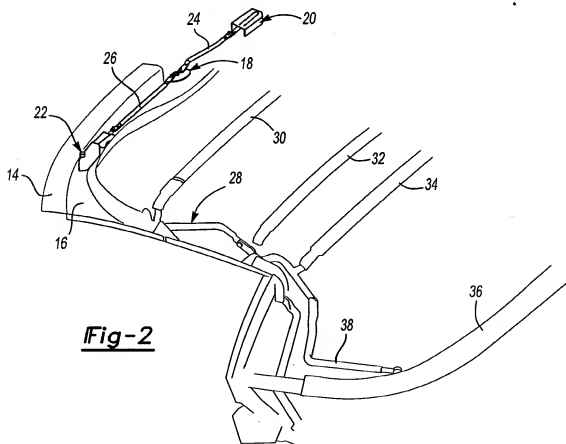


While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes  
5 may be made without departing from the spirit and scope of the invention.

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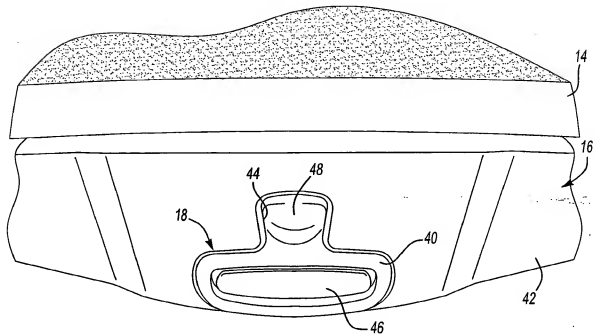


**Fig-1**

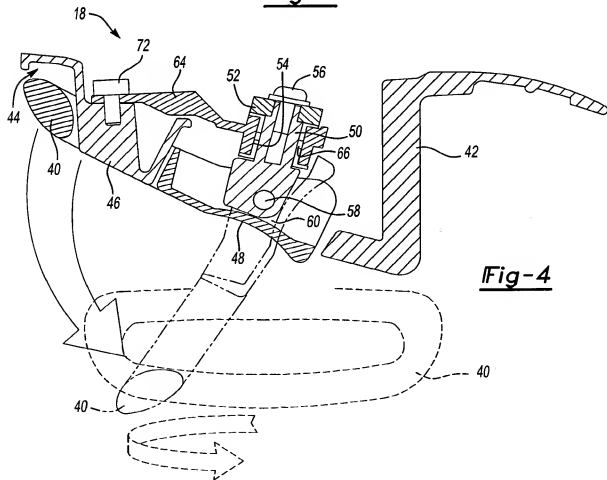


**Fig-2**

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**Fig-3**



**Fig-4**

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